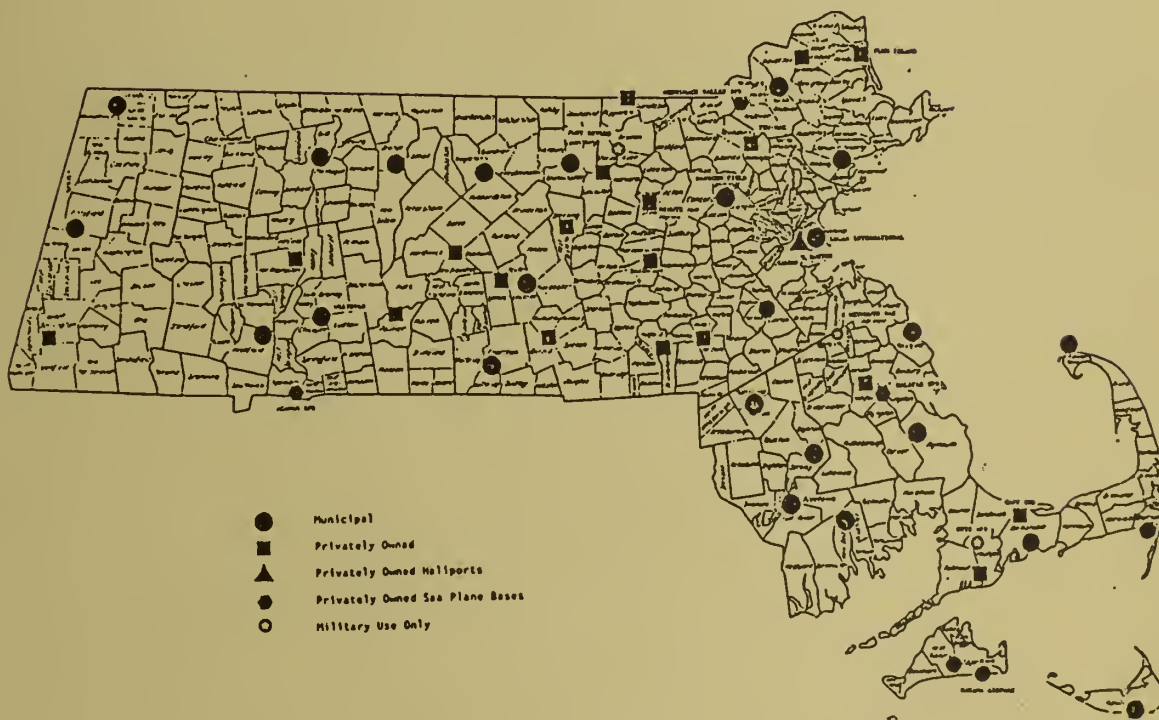


# 1989 Massachusetts Airport System Plan Executive Summary

June, 1989

Prepared by the:

Massachusetts Aeronautics Commission  
10 Park Plaza, Room #6620  
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## **MASP Advisory Committee**

The Commission wishes to acknowledge and express its gratitude to the members of the MASP Advisory Committee for the time and effort devoted to this undertaking.

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## **Introduction**

This is the Executive Summary of the Draft 1989 Massachusetts Airport System Plan (MASP), which was prepared by the Massachusetts Aeronautics Commission (MAC). The summary consists of two parts: first, a narrative which outlines the goals and objectives of the Plan, and describes the major policy recommendations; and, second, a summary of airport data including airport classification, activity forecasts, and the airport capital improvements that will be needed to meet current and future demand.

## **Overview**

The Massachusetts Airport System Plan is a blueprint for the future of the state airport system for the next 20 years. The Federal Aviation Administration (FAA), which prepares the National Plan of Integrated Airport Systems (NPIAS) encourages states to prepare statewide plans. The MAC is encouraged to periodically update the state plan. The last plan was completed in 1980.

## **The Massachusetts Aeronautics Commission (MAC)**

The MAC was established in 1939 by an act of the General Court. It has general supervision and control over aviation at 25 municipal and 19 privately owned, public use airports across the state, while the Massachusetts Port Authority (Massport) is responsible for the operations of both Logan International Airport and Hanscom Field in Bedford.

The MAC administers the state's Airport Improvement Program, develops and maintains the state airport system plan and administers the state Airport Safety and Maintenance Program. The Commission also provides planning and other technical assistance to cities and towns and to business, industry, hospitals, and community groups. Technical assistance includes airport and heliport master planning and engineering, operations safety, noise and land use planning. The MAC works closely with airport sponsors and state environmental agencies to ensure that environmental impacts are identified, and addressed.

The MAC is responsible for enforcing aeronautical laws and regulations, and for approving airport operating rules and lease agreements. It conducts annual safety inspections at all public-use airports and heliports, and certifies their safety of operation. It also administers the Commonwealth's Aircraft Registration Program, including the collection of registration fees.

Subject to appropriation, the MAC may also construct, maintain and operate navigation facilities. It has the powers of eminent domain, and must approve all local airport regulations and airport layout plans. In 1985 the Legislature gave the MAC authority to approve local zoning bylaws or ordinances relating to the use and operation of aircraft at privately owned heliports and airstrips.

## The 1989 Massachusetts Airport System Plan

### Goals and objectives

The forecasts and other aviation data contained in the 1980 MASP are now nearly a decade old. A new system plan is needed to reflect ten years of change in Massachusetts aviation, including the effects of deregulation on commercial air travel.

The airport system plan outlined in this report presents an analysis of the current condition of Massachusetts' airport system, and an assessment of future airport needs.

The plan provides:

- o an inventory of aeronautical activity in Massachusetts;
- o an analysis of the issues facing the state's airports;
- o a planning process to develop and analyze alternatives; and
- o recommendations for the orderly development of a system of airports adequate to meet the state's growing aviation needs, while maintaining sensitivity to community and environmental concerns.

The plan also identifies specific goals and objectives to enhance aviation services in the Commonwealth. It will serve as the basis for the Aeronautics Commission's policies and legislative initiatives, and as a guide to future project funding decisions.

In addition, the plan will provide data on Massachusetts airports to the FAA for use in evaluating possible inclusion in the NPIAS, thereby making them eligible for federal development assistance.



## KEY FINDINGS AND RECOMMENDATIONS

### 1) To develop a system of prioritizing airport improvements

The present period of dwindling government revenues, particularly at the state and local levels, dictates development of rational, standardized and quantifiable criteria for the allocation of scarce resources.

While most of the state's airports are in need of increased levels of financial assistance, the scarcity of fiscal resources necessitates the prioritization of future MAC assistance, and targeting of funds primarily to those facilities that meet certain economic, transportation, environmental, and safety criteria.

Therefore, the Commission proposes that future MAC investment (largely in the form of 90% federal grants awarded by the FAA with a 7.5 percent state match) be directed most heavily at those airports that:

- o offer the greatest direct economic benefit to the host community;
- o serve as the heart of an industrial park and draw business and jobs to an area; and/or
- o serve a valuable transportation function for an entire region.

Additional criteria to be applied include:

- o safety considerations;
- o local community support for airport upgrading or expansion; and
- o environmental impact mitigation requirements.

By instituting the new community support criterion, the MAC will ensure that those airports that have proven they can be responsible neighbors, and have dealt with environmental and noise issues, stand a better chance of gaining funding for their projects and for future development.

#### Priority airports

The above criteria will be used by the MAC in developing a system for prioritizing airport improvement projects. Based on these guiding principles, the following group of airports constitute the Commission's priority list of facilities most worthy of increased funding:

Hyannis-Barnstable Municipal Airport  
Lawrence Municipal Airport  
Martha's Vineyard Airport  
Nantucket Memorial Airport  
New Bedford Municipal Airport  
Pittsfield Municipal Airport

Plymouth Municipal Airport  
Provincetown Municipal Airport  
Westfield Municipal Airport  
Westover Metropolitan Airport  
Worcester Municipal Airport

All but four of these airports -- Lawrence, Plymouth, Pittsfield, and Westfield -- currently have scheduled passenger and/or cargo service, and, therefore already receive dedicated FAA funding based on the number of annual passengers enplaned or cargo tonnage.

Airports not included on this list, however, will not be abandoned. Reliever airports such as Beverly Municipal Airport, Norwood Municipal Airport and Stow-Minuteman (which is privately owned) serve an important role in relieving Logan Airport of general aviation traffic. As FAA-designated reliever airports, they too receive dedicated funding from the FAA. These reliever airports will continue to receive state funding for eligible projects identified in the MASP, so that they can serve general aviation users who do not require access to a major hub airport.

For other general aviation airports, MAC will continue in its supportive role and will suggest solutions to problems, and offer technical assistance with noise and compatible land use planning. These and all of the other public use airports will remain eligible for 70 percent state funding from the Commonwealth's Airport Safety and Maintenance Program.

## 2) The costs of needed improvements

Commercial passenger activity at Massachusetts airports, excluding Logan Airport, is forecast to increase by as much as 400%, from 490 thousand in 1987 to 2 million in 2010.

Many of the state's airports will need runway repairs, improved terminal facilities, improved air traffic control systems, new runways, and other new construction and equipment in order to handle these projected traffic increases.

The cost of these improvements for the 20-year planning period for those eleven airports designated as high priority facilities by the MAC is projected to total \$110.2 million as shown below.

### Costs of Projects at Priority Airports Are:

(in millions)

Hyannis-Barnstable	\$ 9.7
Lawrence	7.4
Martha's Vineyard	18.5
Nantucket	15.7
New Bedford	5.9
Pittsfield	5.7
Plymouth	9.7
Provincetown	2.9
Westfield	5.3
Westover	9.7
Worcester	19.7
<b>Total</b>	<b>\$110.2 million</b>

## Terminal modernization program

Nearly 30 percent (\$30.2 million) of the cost for improvements at the priority airports is being targeted for new or modernized terminal buildings at Hyannis, Martha's Vineyard, Nantucket, Provincetown, Westfield, and Worcester. (Over the past three years, the Commission has provided \$1.1 million in state funds for construction of a new passenger terminal at Westover Metropolitan Airport, which has served to attract the airport's first scheduled airline.)

Terminal buildings at these six airports are over 40 years old and have received only minor renovations since they were built. The buildings need to be replaced or upgraded to provide safe, efficient and convenient processing of passengers. The projects will bring the facilities into compliance with building codes, improve access for disabled travellers, and in some cases provide for expansion to accommodate increased passenger demand, and security improvements.

The modernization program is part of the state's commitment to optimize regional airport service at existing facilities.

## Other airport improvements

The total cost for improvements at the state's other airports over the 20-year planning period is projected to be \$64.7 million. These improvements and their costs are shown in the Airport Improvement Project summary which is attached to this narrative report.

The costs for all improvements at airports in the MASP is estimated at \$174.9 million. Of this amount, the state share is projected to be \$16.1 million, as shown on the table below. This recommended level of funding would support a program that would bring all airports up to Airport Standards Alternative 1. However realizing financial constraints, only Alternative Standards 2 or Alternative Standards 3 may be achievable.

<u>Priority Airport Project Funding Shares (in millions)</u>				
	<u>State</u>	<u>Federal</u>	<u>Local</u>	<u>Total</u>
Terminal Projects (only)	\$ 6.0	\$ 18.2	\$ 6.0	\$ 30.2
Other Projects	6.0	72.0	2.0	80.0
<b>Total</b>	<b>\$12.0</b>	<b>\$ 90.2</b>	<b>\$ 8.0</b>	<b>\$110.2</b>

<u>Non-Priority Airport Project Funding Shares</u>				
Municipal Airports	\$ 3.6	\$ 45.9	\$ 1.3	\$ 50.8
Private Airports	.5*	2.8**	10.6***	13.9
<b>Total</b>	<b>\$ 4.1</b>	<b>\$ 48.7</b>	<b>\$11.9</b>	<b>\$ 64.7</b>

	<u>Totals</u>			
Priority Airport Projects	\$ 12.0	\$ 90.2	\$ 8.0	\$110.2
Non-Priority Projects	4.1	48.7	11.9	64.7
<b>Total</b>	<b>\$ 16.1</b>	<b>\$138.9</b>	<b>\$19.9</b>	<b>\$174.9</b>

\* Eligible only for state Airport Safety and Maintenance Program funding

\*\* Includes privately owned airport designated by the FAA as a reliever

\*\*\* Cost to private airport owner (no government participation)



### 3) Current funding sources for airport improvements

#### **Federal funding**

The bulk of funding for smaller airports comes from the FAA-administered Airport and Airway Trust Fund. The fund is derived from taxes on: airline fares (88% of Trust Fund revenues); air freight; aviation fuel; aircraft tires, tubes and oil; and from interest on trust fund monies.

The FAA will contribute up to 90 percent of the cost of an airport improvement project eligible under the federal aid program. To be eligible for federal funds an airport must be included in the National Plan of Integrated Airport Systems. Thirty-two (32) Massachusetts airports and one proposed heliport in Boston are included in the national plan.

#### **State funding**

State airport development funds are used generally to match the 90 percent share and to assist municipal airport sponsors on non-federal aid projects. The state share is generally 7.5 percent of the total cost of the project.

Since 1986, the state has expended over \$5 million on airport and aviation improvements in the Commonwealth.

MAC's administrative expenses are financed from general revenue and bond appropriations. For every 1 dollar of state funds expended on airport improvements, the Commonwealth receives a return of 13 dollars in total outlays. In view of the large amount of federal funds available, it seems prudent to use state resources to leverage these funds.

The 1985 transportation bond issue authorized the MAC to establish the Airport Safety and Maintenance Program. This program provides partial state funding for basic maintenance and safety projects not eligible for FAA improvement program funding. It has helped many small airports meet federal safety criteria and thereby remain eligible for federal aid.

#### **Local funding**

Municipal airport sponsors generally contribute 2.5 percent of the total cost of the project. Counties, cities and towns that own and operate airports have a number of funding options available to cover operation and improvement costs. These options include user fees such as landing fees, tie-down fees, automobile parking fees, and various rental fees charged to airport tenants such as car rental companies, flight schools and restaurants. For many airports, and particularly smaller facilities, local property tax revenues are needed to help support the airport.

Each municipally owned airport in Massachusetts is run differently, with charges and rentals determined by each individual airport commission.

#### **4) Additional future funding**

The Commission clearly recognizes that the aviation industry makes substantial contributions to the Commonwealth in terms of on-airport jobs created, taxes collected, drawing new industry and development to a given location, and the ripple effect through the economy of those economic activities.

However, it is also the Commission's belief that aviation is an industry capable of making a financial contribution commensurate with services received. This report outlines the compelling need for further funding both for capital improvements and to increase administrative staffing at the MAC to meet the MASP's agenda. **Therefore, the Commission recommends modest increases in aviation related users fees.**

There are various potential sources of state aviation funding, including: general revenues, sales and corporate taxes, aviation fuel taxes, pilot registration fees, and state bonding. All these sources must be studied carefully with an eye toward increasing revenues. In particular, **aircraft registration fees should be increased to levels comparable with other states, and aviation fuel taxes should also be raised.**

Most importantly, **any revenues from new user fees should be specifically dedicated for aviation purposes including upgrading navigational aids to airports.** An analysis of other state's aviation funding shows that those with dedicated sources of funding have strong aeronautical facility programs and well developed air transportation systems.

Even so, the decision to dedicate revenues is left to the wisdom of the General Court.

#### **5) Regional airport system**

After airline deregulation, regional airports at Worcester; Portland, Maine; Providence, Rhode Island; and Manchester, New Hampshire declined, but in the last few years jet service has been introduced to better accommodate travellers from these New England points with direct service to hubs in New York, Chicago, Pittsburgh, Philadelphia and Baltimore.

But the rapid growth experienced at regional airports cannot continue indefinitely for two main reasons. First, the markets have been developed and cannot expand, and second, each regional facility has finite physical limitations. Development of new ground side facilities, such as terminal buildings, parking, and passenger gates -- will occur over the next few years to catch up with the airside growth.

As strong as the growth has been, and as effective as the regional airports are in servicing their own travellers, none is capable of being the second major hub airport. Their primary mission is not to duplicate Logan or handle the overflow, but rather to serve their own geographical market.

Both passengers and airlines prefer to use the dominant hub -- passengers because of the wider range of choice in alternative flights and better connections; and airlines because there is a critical mass of passengers.

#### **6) To study the need for a second major airport for the region**

The possible need for a second major commercial airport to serve Massachusetts and adjacent states has arisen in studies prepared for the MASP.

However, Massport's careful utilization of airspace at Logan Airport holds the potential to meet the region's needs without expansion and in a manner sensitive to the environment.

The more efficient management of Logan's airspace as well as the planned reconfiguration of Logan's ground side facilities, should forestall the need for a second airport well into the next century.

Nonetheless, in the future there may be a need for additional air service in central and western Massachusetts which will be realized as passenger demand builds to sufficient size to sustain a second airport. Such a facility could bring enormous economic benefits to an entire region of the state. By beginning the planning for a site now, the Commonwealth has the opportunity to develop a responsible, coherent plan.

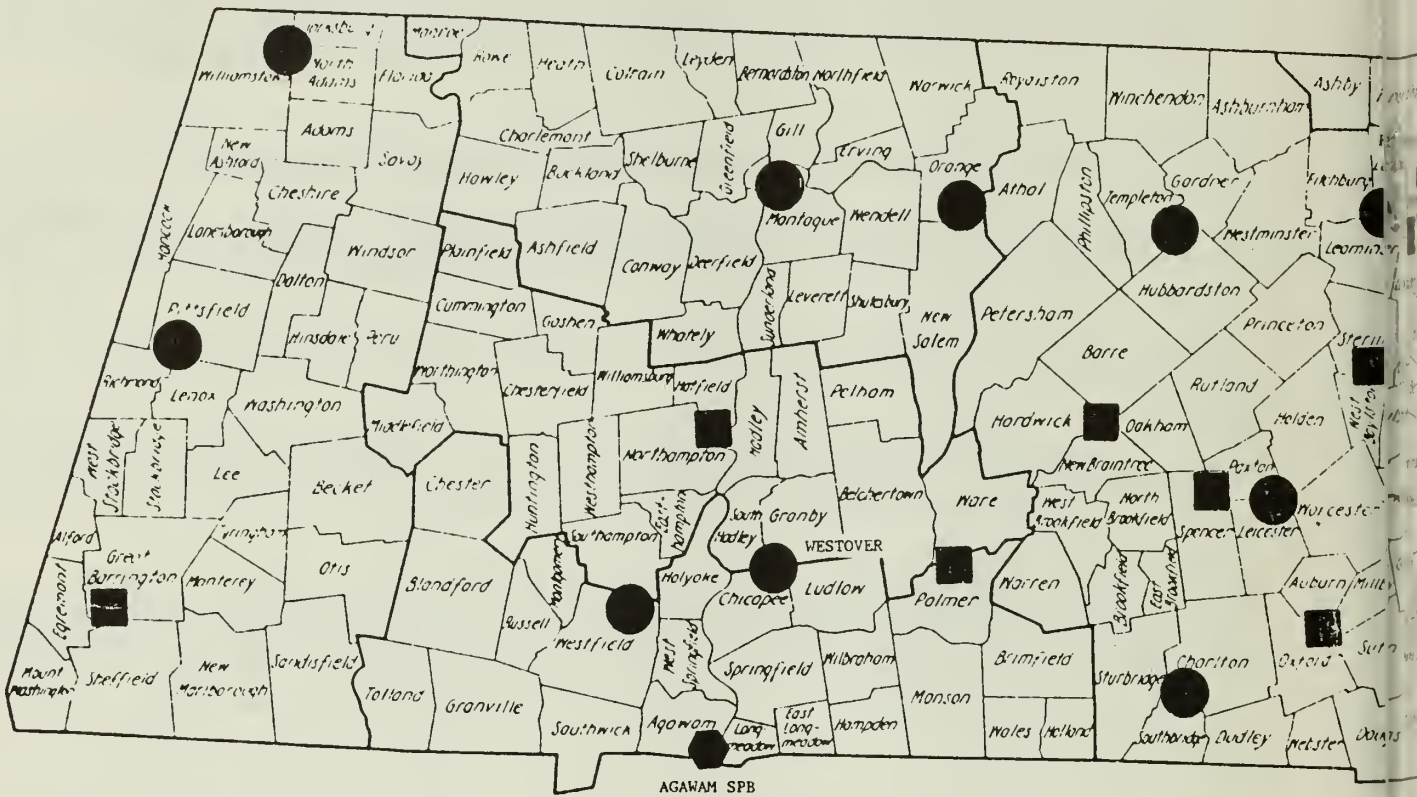
The lengthy process of site selection, planning, and construction of a second airport would take a minimum of 15 years. **Therefore the Commission recommends that the possibility of a second airport be studied, with an eye toward acquiring a site in the 1990's.** Such a "land banking" action would pose political difficulties, but has been accomplished in Denver, Dallas, Toronto, Canada and Sydney, Australia.

#### **Site location factors**

While there may or may not be a site available that will meet the necessary environmental, aeronautical, accessibility, and cost requirements for such a facility, it seems prudent to begin the search process as soon as possible.

MAC recognizes that an adjacent New England state may want to host such a facility for its economic development benefits, and may in fact offer the best possible site. The Commission is open to such a possibility, and will work cooperatively with other New England states to ensure a coordinated regional approach to our aviation needs.





AGAWAM SPB

## MASSACHUSETTS AIRPORTS \*

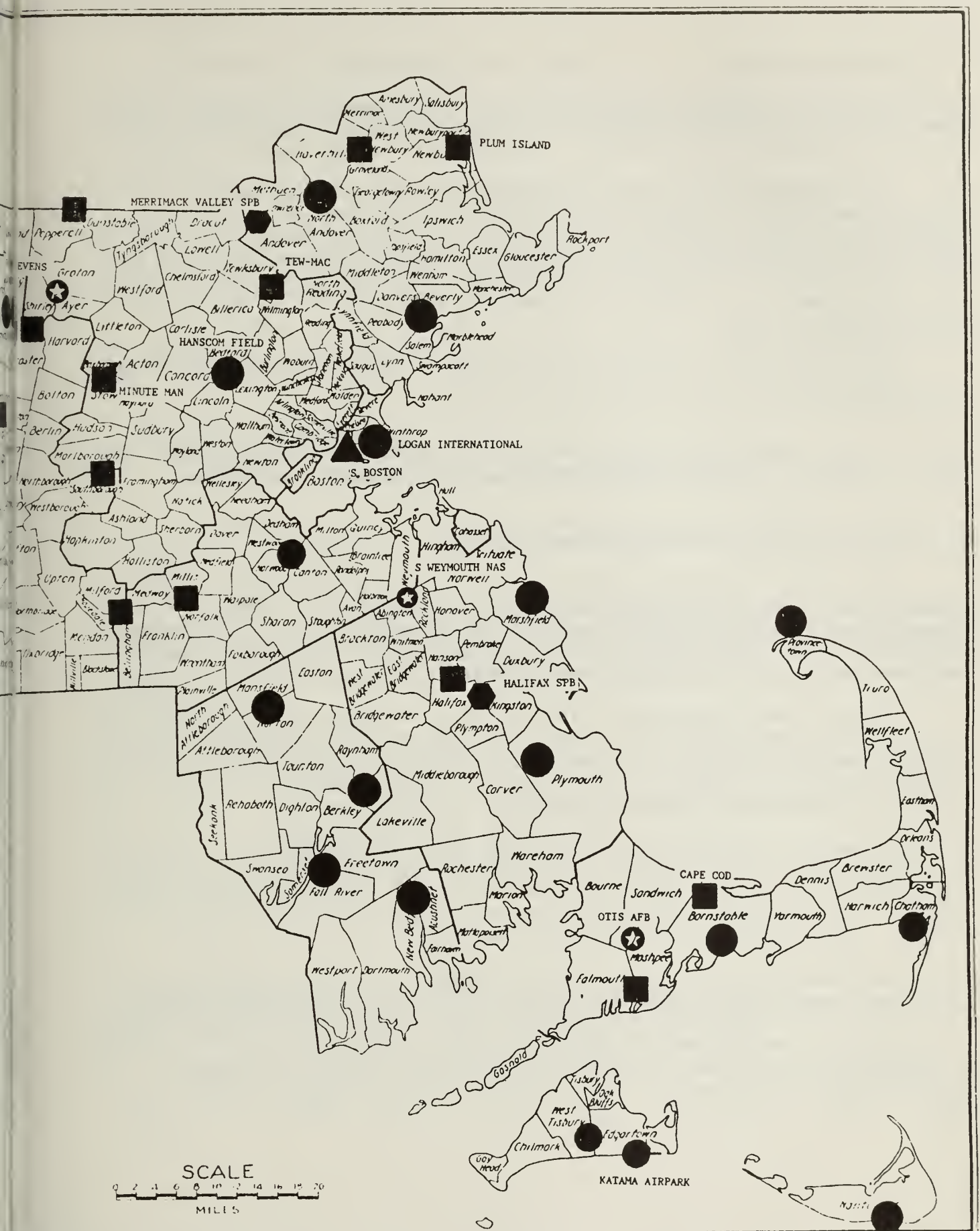
- |    |   |                                 |
|----|---|---------------------------------|
| 27 | ● | Municipal                       |
| 19 | ■ | Privately Owned                 |
| 1  | ▲ | Privately Owned Heliports       |
| 3  | ⬡ | Privately Owned Sea Plane Bases |
| 3  | ★ | Military Use Only               |

===

53

\* / Including public use heliports and sea plane bases.





## **7) Community relations**

Promoting compatible land use around airports and encouraging airport operators to initiate noise abatement programs are both key recommendations of the MASP and high priority of MAC.

When originally built, most airports were sited in underdeveloped areas. Unfortunately, with development replacing farmland and open space, increasingly instances of land use conflict occur. When a housing development is placed at the end of a runway, both airport users and neighbors suffer. The users have their operations restricted, and the neighbors are effected by aircraft noise and other impacts. In this plan the Commission includes provisions to address these growing problems.

It is the Commission's belief that both the airport and the community can be protected by encouraging compatible land use planning by abutting communities and by the municipality that owns the airport.

**In fact, future MAC funding decisions will take into consideration how well a community protects both its airport and the airport's neighbors.**

### **Evaluation of noise levels around airports**

The federal government created the Federal Aviation Regulation (FAR) Part 150 noise and land use compatibility program to help quantify aircraft noise at busier airports and reduce its impacts on nearby communities. FAA grants under the program are administered by the MAC. Federal funds are normally available to those airports with the most severe noise problems.

However, many Massachusetts airports with less severe noise impacts are experiencing rapid growth and consequently they are also beginning to experience noise related impacts. For smaller facilities where FAR Part 150 federal funding may not be available, the Commission has developed a procedure for evaluating and dealing with noise problems.

As part of this MASP, the Commission has also developed a "Procedures Handbook" that allows an airport to evaluate its own existing noise conditions. This evaluation of noise levels may then be used to determine abatement alternatives and to develop land use strategies in conjunction with local communities.

The Commission also supports the development of tools to better measure the impacts of certain types of aviation noise on the surrounding community. While the current "Day-Night (Ldn) Average Noise Contour" methodology provides an appropriate average measure of noise levels, there is a need for a noise quantification method which is more sensitive to the community response to aircraft noise.

## **Evaluation of land uses around airports**

Once noise abatement alternatives and noise reduction benefits have been estimated, land use strategies should be developed by municipalities and incorporated into local bylaws and ordinances.

The Commonwealth needs a coordinated policy to protect the health, safety and welfare of citizens by precluding incompatible land uses around airports. There is a need to examine possible remedies such as the "Fail Safe Provision" of 301 CMR 11.03, (6), to begin to educate the public about the harmful effects of allowing homes to be built too close to an airport.

The Commission has included in this report a "model" community zoning by-law to help local governments cope with zoning issues around airports and private landing areas.

## **8) New laws and regulations**

### **To initiate a comprehensive review of aviation laws**

In the course of preparing information for the MASP it became apparent that Massachusetts' General Laws with respect to aviation are in need of updating and refinement.

Therefore, the Commission recommends the undertaking of a comprehensive review of all of those aviation laws, and the subsequent development of recommendations for the appropriate roles of both state and local governments in maintaining and strengthening the Commonwealth's aviation and airport system.

The review should include:

- o a review of the inter-relationship of aviation and other forms of transportation;
- o a re-examination of the current programs and statutory responsibilities of the MAC; and
- o deliberation on the appropriate administrative structure for the agency.

### **Review of laws and regulations concerning private landing areas**

Besides the 46 public use airports in Massachusetts, some 220 privately owned landing areas exist in the state, including 135 helipads operated by hospitals, high technology companies and smaller businesses.

Under present state zoning laws, cities and towns lack clear authority to regulate the siting of private landing areas. At the same time, the MAC has only limited jurisdiction to regulate these non-commercial private landing sites.



Therefore, the Commission has filed legislation to enable the MAC to develop, in coordination with municipalities: uniform standards for zoning regulations, facility design and operation, noise assessment and compatible land uses. Specifically, the legislation would provide that:

- o MAC review and approve zoning ordinances and bylaws adopted by local communities, as well as conditions associated with special zoning permits;
- o MAC promulgate regulations setting forth standards to be followed by cities and towns that adopt ordinances and bylaws under the state zoning act;
- o MAC regulate the maintenance, operation and safety of private landing areas, and may rescind the right to operate a facility if its criteria are not met; and
- o local communities can establish operating limitations including the hours of operation, and noise level of aircraft operating from a private landing area.

Also, the legislation provides that the MAC will oversee the review and coordination process to ensure local communities are made aware of, and involved in, reviewing applications for new private landing areas.

#### **Environmental coordination**

While MAC's primary regulatory responsibility is in the area of aviation safety, the MAC will continue to work closely with the state Executive Office of Environmental Affairs (EOEA) in reviewing environmental effects of airport development. The primary purpose of the Massachusetts Environmental Policy Act (MEPA) is to ensure that significant land use decisions are made in a way that respects the environment and reduces negative environmental effects as much as is practicable. Unlike most environmental protection statutes, however, the MEPA places a positive performance burden on all state agencies to protect the environment in areas over which they have regulatory control.

The MAC will also work with EOEA to better define those environmental review thresholds which relate to activities at the smaller airports under MAC's jurisdiction.

#### **Protection of approaches to public use airports**

The Commission further recommends that the Governor seek legislative support for a law giving statutory authority to protect existing runways and runway approaches at all public use airports and flyways between airports.



**9) Identifying future planning needs**

The Commission recommends that a continuous airport system planning process be established to implement the MASP recommendations, and to keep the Plan current and dynamic. Specific procedures will be established by the Commission as to data collection and surveillance, update, schedule, and plan reappraisal. This continuous planning is eligible for 90 percent FAA funding.

This update process should be integrated into the biennial transportation bond issue cycle and a 5 year airport improvement program developed. The MAC capital development program will list specific projects to be carried out over that 5 year period.

**10) To continue study for a downtown Boston heliport**

The need for a commercial heliport located in downtown Boston has been identified in the Statewide Heliport System Study which was prepared as part of the MASP. The Commission recommends to continue planning for a site that would serve as a replacement for the existing Nashua Street Heliport which is scheduled to be closed in the early 1990's.

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**1989 MASSACHUSETTS AIRPORT SYSTEM PLAN**

**Airport Data Summary**

**and**

**Recommended Airport Improvement Projects**

**May, 1989**

## AIRPORT DATA SUMMARY AND IMPROVEMENT PROJECTS

### Airport Classification

The design of an airport is predicated on the type of aircraft the airport is intended to accommodate. The MASP airport design classifications are based on the latest FAA terminology. MAC has classified each airport on the basis of the role each airport should currently serve in the statewide system, as well as the role each airport should serve in the future. A set of criteria was established that use 11 factors indicative of facility development, use and the socio-economic characteristic of each airport's service area. Points assigned to each of the 11 criteria are added and compared to the minimum number of points required for each airport classification.

Future alternative forecasts were applied to the airport classification to determine future airport classifications. (See the following table.)

<u>FACTORS</u>	<u>Criteria</u>	<u>POINTS</u>
<b>Usage Characteristics</b>		
1. General Aviation Service Area Population		0-10
2. Communities Served by a Single Airport		0-14
3. Registered Based Aircraft		0-30
4. Commercial Passenger Enplanements		0-65
5. Total Operations		0-40
6. Itinerant Operations		0-20
<b>Facility Characteristics</b>		
1. Number of Runways		2-10
2. Primary Runway Length		0-20
3. Primary Runway Edge Lighting		0-5
4. Critical Aircraft		0-10
5. Instrument Meteorological Condition Minimum		0-10
		=====
TOTAL POINTS		2-234

### Definition

<u>CLASSIFICATION</u>	<u>MINIMUM POINTS NEEDED</u>	<u>DESCRIPTION</u>
Transport	100	Serves virtually all types of aircraft, precision instrument approaches
General Utility II (GU-2)	75	Serves large aircraft up to 60,000 lbs., precision instrument approaches
General Utility I (GU-1)	50	Serves single and twin engine aircraft up to 12,500 lbs.
Basic Utility II (BU-2)	40	Serves small single engine and light twin aircraft up to 6,500 lbs.
Basic Utility I (BU-1)	30	Serves small single engine aircraft generally under 3,500 lbs.
Local Utility (LU)	--	Airports that support aircraft operations that do not require a Basic Utility I airport

1987 AIRPORT DATA

ID	COMMUNITY NAME	OWNER-SHIP TYPE	GA SERVICE AREA 1985 POPULATION	AREA 1 A/P COMM.	REGISTERED BASED AIRCRAFT	1984 PASSENGER ENPLANEMENTS	OPERATIONS		ANNUAL SERVICE VOLUME	# OF RUNWAYS	PRIMARY RUNWAY		CRITICAL A/C CODE*	IMC MINIMUMS ALT. DISTANCE			
							TOTAL	ITINERANT			LENGTH	WIDTH			PAVE-MENT*	LIGHTS*	
885 BARRE		P	40,935	1	22		22,000	10,000	155,793	1	2,450	35	B	L	A1A02	1,200	3.00
890 BEDFORD		MFA	1,037,523		375		239,431	166,252	310,165	2	7,001	150	C	H	C2C04	200	0.50
894 BEVERLY		M	415,004	2	211		139,555	59,751	344,199	2	5,001	150	B	M	B1B05	472	1.00
895 BOSTON		MFA	10,426		42	10,911,275	423,869	423,869		3	10,005	150	B	H	E4B07	200	0.50
896 CATHAM		M	42,742				25,000	10,000	174,396	1	3,000	100	B	M	B1B05	508	1.00
897 CHICOPPE		M	54,481		43		50,513	26,852	134,657	2	10,400	300	B	H	E4C77	200	0.50
898 DORCHAM		P	1,225		3		16,200	12,200	201,940	4	4,000	150	T		B2A07	1,200	3.00
899 FALL RIVER		M	113,451		60		32,018	12,000	168,956	2	3,953	150	B	M	B1A05	608	1.00
900 FALMOUTH		P	20,926		17		7,078	3,000	123,793	1	2,285	20	B	L	A1A04	1,200	3.00
901 FITCHBURG		M	149,885		133		40,000	15,000	228,215	2	4,508	150	B	M	B1B12	1130	1.25
902 GARDNER		M	40,419		39		23,766	7,300	125,744	1	3,000	75	B	M	B1A04	765	1.00
903 GREAT BARRINGTON		P	27,413	5	33		37,107	11,000	141,095	1	2,600	50	B	L	B1B07	1181	1.25
904 HANSON		P	88,722		38		2,110	110	107,988	1	1,845	60	B		A1A02	1,200	3.00
905 HAVERTHILL		P	22,850		4		5,600	2,200	152,955	2	1,620	40	B		B1B06	1,200	3.00
906 HOPEDALE		P	39,343		36		22,082	8,082	139,081	1	3,160	90	B	L	A1A04	631	1.00
907 HYANNIS		M	86,255		87	125,876	174,574	130,161	254,482	3	5,420	150	B	H	D3B07	250	1.00
908 LAURENCE		M	200,187		203		168,822	67,166	331,901	2	4,997	150	B	H	B1B05	250	0.75
909 MARSHFIELD		M	201,844		104		42,520	10,520	294,622	2	3,500	75	B	M	B1B05	526	1.00
910 MARLBORO		P	54,463		64		30,076	3,128	173,012	1	1,682	50	B		B1A05	1,200	3.00
911 MARSHFIELD		M	133,981		59		47,838	15,500	275,619	1	3,000	75	B	M	B1B07	631	1.00
912 MASSON HILLS		P	9,142		9		1,700	700	222,039	3	2,608	70	T		A1A02	1,200	3.00
913 MARTHA'S VINEYARD		M	9,077		38	41,000	69,000	56,370	283,037	3	5,439	150	B	H	D3C12	200	0.50
914 MONTAGUE		M	66,439	1	60		35,127	10,000	258,187	1	3,000	75	B	M	B1B05	1164	1.25
915 NANTUCKET		M	5,820	1	58	140,353	98,749	87,996	215,767	3	6,203	150	B	H	D3C12	200	0.50
916 NEW BEDFORD		M	141,233		107	42,718	122,091	90,961	243,669	2	5,000	150	B	H	D3B07	390	1.00
917 NEWBURYPORT		P	38,275		21		17,650	5,650	160,768	1	2,520	50	B	L	A1A03	649	1.00
918 NORFOLK		P	104,207		63		25,026	10,020	139,081	1	2,700	40	B	L	B1B07	1,200	3.00
919 NORTH ADAMS		M	37,839	5	31		34,995	12,777	266,064	1	4,300	100	B	M	C2B01	1,200	3.00
920 NORTHAMPTON		P	92,654	4	58		26,875	13,300	189,961	1	3,500	50	B	L	B1B07	937	1.00
921 NORWOOD		M	551,653		209		136,194	82,857	217,779	2	4,007	150	B	H	C2B05	611	1.00
922 ORANGE		M	46,671		39		10,000	4,000	251,473	2	5,000	150	B	L	A1A04	885	1.25
923 OXFORD		P	58,527	1	27		7,200	3,300	142,455	1	2,047	50	B	L	A1A03	1,200	3.00
924 PALMER		P	51,409		20		10,300	4,300	167,815	1	2,475	55	B	L	A1A03	1082	1.25
925 PEPPERELL		P	17,771		11		2,200	200	153,663	1	2,685	25	B		A1A03	1,200	3.00
926 PITTSFIELD		M	75,947	7	30		52,514	21,075	175,039	2	5,000	100	B	M	B2B10	426	1.50
927 PLYMOUTH		M	318,962		195		126,000	36,000	245,705	2	3,500	75	B	M	C2B01	431	0.75
928 PROVINCETOWN		M	12,612	3	6	15,711	24,182	20,100	290,555	1	3,498	100	B	M	D3A09	200	0.75
929 SHIRLEY		P	6,849		5		20,070	6,790	178,177	1	3,250	55	B	L	A1A02	1,200	3.00
930 SOUTHBRIDGE		M	67,963		59		25,312	13,500	222,996	2	3,500	75	B	M	B1B05	583	1.00
931 SPENCER		P	20,477		8		1,000	100	149,895	1	1,700	100	T		A1A01	1,200	3.00
932 STERLING		P	44,889		36		13,293	2,751	117,968	1	3,025	40	B	L	A1A03	1,200	3.00
933 STOW		P	129,697		79		38,400	26,880	204,349	2	2,770	48	B	L	B1A05	712	1.00
934 TAUNTON		M	230,228		116		71,036	18,600	154,160	1	3,500	75	B	M	B1B08	658	1.00
935 TEWKSBURY		P	124,542		77		60,000	30,610	235,770	2	2,630	26	B	L	B1B05	508	1.00
936 WESTFIELD		M	289,035	3	189		132,816	79,975	226,034	2	9,000	150	B	H	C1B02	200	0.50
937 WORCESTER		M	185,668		108	108,623	122,575	64,128	166,115	2	6,999	150	B	H	D3B14	200	0.50
TOTAL-Less Boston-Logan									9,149,263	74							



# MASSACHUSETTS AIRPORT SYSTEM PLAN 1987 BASE AND YEAR 2010 ALTERNATIVE FORECASTS

ID	COMMUNITY NAME	AIRPORT NAME	CLASSIFICATION				EMPLACEMENTS (000's)				BASED AIRCRAFT				TOTAL OPERATIONS (000's)			
			1987	ALT 3*	ALT 2*	ALT 1*	1987	ALT 3*	ALT 2*	ALT 1*	1987	ALT 3*	ALT 2*	ALT 1*	1987	ALT 3*	ALT 2*	ALT 1*
B85	BARRE	BARRE-HILLER	LU	LU	BU-1	BU-2	22	24	30	40	22	28	32	44	22	28	32	44
BED	BEDFORD	LAURENCE G. HANSCOM FIELD	TRAN	TRAN	TRAN	TRAN	375	404	514	575	239	290	330	446	239	290	330	446
BEV	BEVERLY	BEVERLY MUNICIPAL	GU-2	TRAN	TRAN	TRAN	211	228	289	323	140	181	207	279	140	181	207	279
BOS	BOSTON	LOGAN INTERNATIONAL AIRPORT	TRAN	TRAN	TRAN	TRAN	1				424				424			
086	CHATHAM	CHATHAM MUNICIPAL	BU-1	BU-1	BU-2	BU-2	43	46	59	66	25	29	33	44	25	29	33	44
CEC	CHICPEE	WESTOVER AIR FORCE BASE	GU-1	TRAN	TRAN	TRAN	43	46	59	66	51	59	68	91	51	59	68	91
182	EDGARTOWN	KATAMA AIRPARK	LU	LU	BU-1	BU-1	3	3	4	5	16	18	20	28	16	18	20	28
FLR	FALL RIVER	FALL RIVER MUNICIPAL	BU-2	BU-2	GU-1	GU-1	60	65	82	92	32	41	46	62	32	41	46	62
586	FALMOUTH	FALMOUTH	LU	LU	LU	LU	17	18	23	26	7	9	11	14	7	9	11	14
FIT	FITCHBURG	FITCHBURG MUNICIPAL	GU-1	GU-1	GU-1	GU-1	133	143	182	204	40	46	52	71	40	46	52	71
GDM	GARDNER	GARDNER MUNICIPAL	BU-1	BU-1	BU-1	BU-2	39	42	53	60	24	26	30	41	24	26	30	41
GBR	GREAT BARRINGTON	GREAT BARRINGTON	BU-2	BU-2	GU-1	GU-1	33	36	45	51	37	48	54	73	37	48	54	73
MA02	HANSON	CRANLAND	LU	LU	LU	LU	38	41	52	58	2	2	3	4	2	2	3	4
MA04	HAVERHILL	HAVERHILL-RIVERSIDE	LU	LU	LU	LU	6	6	8	9	6	7	8	11	6	7	8	11
186	HOPEDALE	HOPEDALE-DRAPER	BU-1	BU-1	BU-1	BU-2	36	39	49	55	22	23	27	36	22	23	27	36
HYA	HYANNIS	BARNSTABLE MUNICIPAL	TRAN	TRAN	TRAN	TRAN	87	93	118	132	175	199	228	307	175	199	228	307
LWM	LAKEVILLE	LAKEVILLE MUNICIPAL	GU-2	TRAN	TRAN	TRAN	203	219	278	311	169	194	221	298	169	194	221	298
189	MANSFIELD	MANSFIELD MUNICIPAL	GU-1	GU-1	GU-1	GU-1	104	112	142	159	43	50	57	77	43	50	57	77
981	MARLBORO	MARLBORO	LU	LU	BU-2	GU-1	44	69	88	98	30	39	44	59	30	39	44	59
382	MARSHFIELD	MARSHFIELD	BU-2	BU-2	GU-1	GU-1	59	64	81	90	48	57	65	88	48	57	65	88
281	MARSTON MILLS	CAPE COD	LU	LU	LU	LU	9	10	12	14	2	2	3	4	2	2	3	4
MYV	MARTHA'S VINEYARD	MARTHA'S VINEYARD	GU-2	TRAN	TRAN	TRAN	38	41	52	58	69	79	90	122	69	79	90	122
085	MONTAGUE	TUNNERS FALLS	BU-1	BU-2	BU-2	GU-1	60	65	82	92	35	45	51	69	35	45	51	69
ACK	NANTUCKET	NANTUCKET MEMORIAL	TRAN	TRAN	TRAN	TRAN	58	63	79	89	99	172	196	265	99	172	196	265
ENB	NEW BEDFORD	NEW BEDFORD MUNICIPAL	TRAN	TRAN	TRAN	TRAN	107	115	147	164	132	151	173	233	132	151	173	233
282	NEWMURYPORT	PLUM ISLAND	LU	LU	BU-1	BU-1	21	23	29	32	18	20	23	31	18	20	23	31
MA07	NORFOLK	NORFOLK	BU-1	BU-1	BU-2	GU-1	63	68	86	97	25	32	37	49	25	32	37	49
286	NORTH ADAMS	HARRIMAN AND WEST	BU-2	GU-1	GU-1	GU-1	31	33	42	47	35	44	51	68	35	44	51	68
782	NORTHAMPTON	NORTHAMPTON (LA FLEUR)	BU-2	GU-1	GU-1	GU-1	58	63	79	89	27	34	39	53	27	34	39	53
OND	NORWOOD	NORWOOD MEMORIAL	GU-2	TRAN	TRAN	TRAN	209	225	286	320	136	156	178	240	136	156	178	240
ORE	ORANGE	ORANGE MUNICIPAL	BU-1	BU-1	BU-1	BU-2	39	42	53	60	10	11	13	18	10	11	13	18
MA08	OXFORD	OXFORD	LU	LU	LU	BU-1	27	29	37	41	7	9	11	14	7	9	11	14
PMX	PALMER	METROPOLITAN	LU	LU	LU	BU-1	20	22	27	31	10	13	15	21	10	13	15	21
MA09	PEPPERELL	SPORTS CENTER	LU	LU	LU	LU	11	12	15	17	2	3	3	4	2	3	3	4
PSF	PITTSFIELD	PITTSFIELD MUNICIPAL	GU-1	GU-1	GU-1	GU-2	30	32	41	46	53	70	80	106	53	70	80	106
PYM	PLYMOUTH	PLYMOUTH MUNICIPAL	GU-2	GU-2	GU-2	TRAN	195	210	267	299	126	144	165	222	126	144	165	222
PVC	PROVINCETOWN	PROVINCETOWN MUNICIPAL	GU-1	GU-2	GU-2	GU-2	6	6	8	9	24	32	36	49	24	32	36	49
984	SHIRLEY	SHIRLEY	LU	LU	LU	BU-1	5	5	7	8	20	26	29	40	20	26	29	40
380	SOUTHBRIIDGE	SOUTHBRIIDGE MUNICIPAL	BU-2	BU-2	BU-2	GU-1	59	64	81	90	25	29	33	45	25	29	33	45
MA10	SPENCER	ANDREWS AVIATION	LU	LU	LU	LU	8	9	11	12	1	1	1	2	1	1	1	2
383	STERLING	STERLING	LU	LU	LU	BU-1	36	39	49	55	13	15	17	23	13	15	17	23
686	STON	MINUTE MAN AIRFIELD	BU-2	BU-2	GU-1	GU-1	79	85	108	121	45	46	52	71	45	46	52	71
TAN	TAUNTON	TAUNTON MUNICIPAL	GU-1	GU-1	GU-1	GU-2	116	125	159	178	71	86	98	133	71	86	98	133
809	TEKESBURY	TEK-MAC	GU-1	GU-1	GU-1	GU-1	77	83	105	118	60	69	78	106	77	83	105	118
BAF	WESTFIELD	BARNES MUNICIPAL	TRAN	TRAN	TRAN	TRAN	189	204	259	290	133	152	174	234	133	152	174	234
ORH	WORCESTER	WORCESTER MUNICIPAL	TRAN	TRAN	TRAN	TRAN	108	116	148	165	123	140	160	216	108	116	148	216
TOTAL -- Excluding Boston-Logan							474	1,023	1,408	2,010	3,235	3,487	4,425	4,962	2,427	2,931	3,344	4,510

\* -- Values represent year 2010 figures for the respective alternative forecast



## Airport Improvement Projects

For each airport classification three alternative sets of airport improvement standards were developed. Alternative #3 replicates about the level of capital airport improvements undertaken during the latter 1970s. Alternative #2 incorporates FAA recommendations where they exist (none exist for pavement condition). Alternative #1 contain higher standard levels.

The "MASP Project Recommendations" table summarizes the number of airport capital improvement projects each MASP airport. The projects were identified by comparing existing airport development against the respective alternative standards. Where existing conditions do not meet minimum threshold standards, a project was identified and cost estimated (in 1987 dollars). Future year projects were identified in the same way with an assumption that all projects previously identified had been completed.

The list of projects is unconstrained in terms of meeting environmental considerations, physical constraints (e.g. mountains, rivers), and funding available. Projects normally funded under MAC's Airport Safety and Maintenance Program as well as planning, environmental and engineering feasibility projects are not included in the project lists.

The total cost of all projects can be compared with the estimated federal funding assumed to be available between 1988 and 2010. It was assumed that the FAA will continue to provide grants for capital airport improvements at the same levels as provided for in the Airport and Airway Expansion Act of 1987. At this level of federal funding, it appears that there may be sufficient federal dollars available for FAA eligible projects called for under any of the three alternatives. State and local airport sponsor match and projects not eligible for federal reimbursement (e.g. airport pavement maintenance) need further review.

MASP PROJECT RECOMMENDATIONS

(1987-2010, \$000)

ID	COMMUNITY NAME	ALTERNATIVE				TOTAL	#1 COST	ALTERNATIVE				TOTAL	#2 COST	ALTERNATIVE				TOTAL	#3 COST
		RTO	NAV	REH	OTHER			RTO	NAV	REH	OTHER			RTO	NAV	REH	OTHER		
885	BARRE	5	3	1		9	\$464.4	2	4	1		3	\$578.0					4	\$0.0
886	BEVERLY	6	2	11	4	23	\$6,938.2	4	2	7	3	16	\$4,791.4					4	\$2,931.9
086	CHAITHAM	2	1		2	5	\$467.4	2	2			4	\$262.1					1	\$0.0
CEP	CHICOPEE	7	3	9	3	15	\$9,688.9	1	7	4		6	\$7,414.3					2	\$4,158.6
182	EDGARTOWN					10	\$3,260.7	5	2	1		6	\$2,822.0					1	\$0.0
FLR	FALL RIVER	8	5	5	3	21	\$5,443.4	4	4	4		12	\$2,706.7					1	\$2,156.4
586	FALMOUTH	1	3	4	5	1	\$200.5	1	2	1	1	1	\$87.1					1	\$0.0
FIT	FITCHBURG	3	3	2	3	15	\$4,308.5	1	1			5	\$88.9					1	\$76.3
GDM	GARDNER	5	3	2	3	13	\$1,886.0	5	3	4		12	\$94.7					1	\$114.2
GBR	GREAT BARRINGTON	3	1	2		6	\$342.9						\$874.8					1	\$81.8
MA02	HANSON	2	1	1		3	\$281.0	1	1			1	\$6.0						\$0.0
MA04	HAVERTHILL	3	3	1		2	\$148.4					1	\$30.0						\$0.0
186	HOPEDALE	5	1	8	6	19	\$723.2	3	1	1	5	12	\$467.9					3	\$0.0
HVA	HYANNIS	5	1	10	4	20	\$9,658.7	3	1	4	3	12	\$7,529.9					3	\$6,282.3
LWM	LAWRENCE						\$7,427.9						\$4,631.8					3	\$3,648.0
189	MANFIELD	6	4	4	4	18	\$3,097.8	5	3	2		10	\$1,912.5					3	\$1,034.3
981	MARLBORO	6	7	1		14	\$901.0	8	3	3		11	\$1,089.1						\$0.0
382	MARSHFIELD	2	5	4		11	\$1,206.7	2	4	1		7	\$452.2					1	\$83.3
281	MARSTON MILLS	4	1	12	4	21	\$753.2	3	1	7	4	15	\$753.2					2	\$50.0
MYV	MARTHA'S VINEYARD						\$18,453.3						\$14,996.1					2	\$12,015.2
085	MONTAGUE	6	4	3	3	16	\$1,734.1	2	1	2		4	\$450.0					1	\$370.3
ACK	NANTUCKET	5	1	8	7	21	\$15,718.9	2	2	3	7	13	\$12,263.1					2	\$7,841.5
EWB	NEW BEDFORD	5	1	9	5	19	\$5,920.1	2	1	4	5	11	\$4,258.8					2	\$1,832.0
282	NEWBURYPORT	1	1			2	\$121.5	1	1			2	\$828.6					1	\$0.0
MA07	NORFOLK	12	6	4		22	\$2,466.6	5	1	2		9	\$1,171.9					2	\$204.9
286	NORTH ADAMS																		
782	NORTHAMPTON	9	4	4	4	8	\$1,821.6	5	3	1		1	\$180.4					1	\$0.0
OWD	NORWOOD	8	3	4	5	17	\$1,566.5	7	3	3		11	\$856.4					7	\$124.8
ORE	ORANGE	1	1	6	5	22	\$3,821.7					15	\$3,234.9					1	\$2,079.0
MA08	OXFORD	8	2	1		11	\$3,961.2	1			2	5	\$3,175.5					1	\$500.0
							\$1,497.7						\$5.7						\$0.0
PMX	PALMER	2	1	1		3	\$85.5	1	1			2	\$0.0						\$0.0
MA09	PEPPERELL	1	1	1	5	3	\$187.3						\$32.7						\$0.0
PSF	PITTSFIELD	4	3	5	5	17	\$5,684.6	1	2	3	2	7	\$4,008.6					3	\$349.2
PYM	PLYMOUTH	10	4	9	5	28	\$9,667.3	3	3	5	4	15	\$5,176.9					2	\$1,640.8
PVC	PROVINCETOWN	3		5	5	13	\$2,921.8	2		3	5	10	\$2,229.6					1	\$191.3
984	SHIRLEY	3	2	1		6	\$409.3	1	1			1	\$5.8						\$0.0
380	SOUTHBURGH	8	4	2	5	19	\$3,417.5	3	1		2	5	\$1,500.3					1	\$392.0
MA10	SPENCER	2	1			3	\$186.3	1	1			2	\$32.7						\$0.0
383	STERLING	1	2	2		5	\$589.0	1		1		2	\$264.3					1	\$182.7
686	STOW	12	6	5		23	\$3,433.7	10	5	4		19	\$2,153.5					2	\$1,042.6
TAN	TAUNTON	10	6	6	4	26	\$4,920.5	4	3	4	4	15	\$2,669.5					3	\$1,267.6
809	TEKESBURY	7	6	6	4	19	\$2,051.3	6	1	4		11	\$1,647.9					2	\$4,697.9
BAF	WESTFIELD	3	1	10	4	18	\$5,311.9	2	1	5	3	11	\$4,326.0					3	\$5,686.7
ORH	WORCESTER	3		9	5	17	\$19,674.0	2		6		12	\$14,487.6					2	\$13,738.6
TOTAL		199	106	180	100	585	\$174,822.0	113	60	99	55	327	\$117,349.1					47	\$70,724.2

RTO - New runways, taxiways & safety overruns  
NAV - Navigational aids

REH - Repave & pavement rehabilitation  
OTHER - Terminals, aprons, land acquisition & capacity enhancement

# MASSACHUSETTS AIRPORT SYSTEM PLAN

## D A T A     C O D E S

### OWNERSHIP TYPE

O - publicly owned  
P - privately owned

NATIONAL PLAN OF INTEGRATED  
AIRPORT SYSTEMS (NPIAS) LEVEL  
PR - primary commercial service  
CM - other commercial service  
RL - reliever  
GA - general aviation  
N - not included in NPIAS

NATIONAL PLAN OF INTEGRATED  
AIRPORT SYSTEMS (NPIAS) ROLE  
TR - transport  
GU - general utility  
BU - basic utility  
N - not included in NPIAS

### RUNWAY SURFACE

C - portland cement concrete  
B - bituminous concrete (asphalt)  
T - turf  
G - gravel  
W - water

### RUNWAY LIGHTING

H - high intensity  
M - medium intensity  
L - low intensity

### AIRCRAFT CODE (Five Characters)

#### 1st-Weight & Engine Classification

A - < 12,500 lbs. / single engine  
B - < 12,500 lbs. / multi engine  
C - 12,500 lbs. - 60,000 lbs.  
D - 60,000 lbs. - 300,000 lbs.  
E - > 300,000 lbs.

#### 2nd-Wing Span Design Group

1 - < 49'  
2 - 49'-78'  
3 - 79'-117'  
4 - 118'-170'  
5 - 171'-196'  
6 - 197'-262'

#### 3rd-Approach Speed Category

A - < 91 k.  
B - 91-120 k.  
C - 121-140 k.  
D - 141-166 k.  
E - > 166 k.

#### 4th & 5th-Aircraft Weight (rounded)

Class A & B - 1,000s of pounds  
Class C, D & E - 10,000s of pounds

#### Composite Aircraft Codes

H1H01 - H1H10 - helicopter  
S1S01 - sail plane  
U1U01 - ultra light  
Y1Y01 - balloon  
Z1Z01 - unknown aircraft type

**Massachusetts Aeronautics Commission**  
10 Park Plaza Room 6620, Boston, MA 02116-3966  
(617) 973-7350

**MASSACHUSETTS AIRPORT SYSTEM PLAN**

**SPECIAL STUDIES AND TECHNICAL REPORTS**

TASK	TITLE	DATE
=====		
I.A/II.A	Summary of Aviation Data & Planning Studies	10-88
II.B	Aviation Forecasts	12-88
II.C	Aviation Capacity/Delay Analysis	4-88
II.D	Airport Improvement Standards	1-88
II.E	Pavement Maintenance Analysis	12-88
III.A	Purpose of the Statewide Airport System Plan	9-87
III.B	Unconstrained Airport Classification	4-88
III.C	Airport Project Identification/Capacity Enhancement	7-88
III.C/.D	Airport Project Identification & Project Evaluation	12-88
III.E	Final Report	6-89
IV.A	Boston Regional Airports Study - Logan Passenger Survey	1-87
IV.A	Boston Regional Airport System Study - Final Report	7-89
IV.B	Heliport Planning & Procedure Manual	9-88
IV.B	Massachusetts Heliport System Plan	9-88
IV.C	Business Benefits of General Aviation	8-88
IV.D	Surplus Airport Property Special Study	9-88
IV.E	Procedure for Achievement of Noise/Land Use Compatibility	8-88
IV.E	Test of Procedure for Achievement of Noise/Land Use Compatibility	6-88
IV.F	Memorandum of Law - Model Zoning By-Law Study	7-88
IV.F	Review of Zoning By-Laws Regulating Aviation	3-88
IV.F	Aviation Sites & Zoning Regulations by Community	3-88
IV.F	Model Zoning By-Law for Municipalities	3-89
IV.G	Airport and Airway Encroachment Protection Regulation Study	9-88
IV.H	MAC Regulation of Airports and Restricted Landing Areas	12-88
IV.H	Final Draft 702 CMR 8.00 - 14.00 MAC Landing Area Regulations	3-89